ALIENWARE® M15x SERVICE MANUAL

Notes, Cautions, and Warnings

⚠ **NOTE:** A NOTE indicates important information that helps you make better use of your computer.

⚠ **CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.**

⚠ **WARNING: A WARNING indicates a potential for property damage, personal injury, or death.**

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CONTENTS

CHAPTER 1: BEFORE YOU BEGIN

This section provides procedures for removing and installing the components in your computer. Unless otherwise noted, each procedure assumes that the following conditions exist:

- You have performed the steps in "Turning Off Your Computer" on page 7 and "Before Working Inside Your Computer" on page 8.
- You have read the safety information that shipped with your computer.
- A component can be replaced or—if purchased separately—installed by performing the removal procedure in reverse order.

Recommended Tools

The procedures in this document may require the following tools:

- Small flat-blade screwdriver
- Phillips screwdriver
- Plastic scribe

Turning Off Your Computer

⚠️ **CAUTION: To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.**

1. Save and close all open files and exit all open programs.
2. In Microsoft® Windows®, click Start 🪟, click the arrow ▶, and then click **Shut Down**.
   The computer turns off after the operating system shutdown process finishes.
3. Ensure that the computer is turned off. If your computer did not automatically turn off when you shut down the operating system, press and hold the power button until the computer turns off.

Before Working Inside Your Computer

Use the following safety guidelines to help protect your computer from potential damage and to help to ensure your own personal safety.

⚠ WARNING: Before you begin any of the procedures in this section, follow the safety instructions that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

⚠ CAUTION: Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges. Hold a component such as a processor by its edges, not by its pins.

⚠ CAUTION: When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

⚠ CAUTION: To avoid damaging the computer, perform the following steps before you begin working inside the computer.

1. Ensure that the work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer (see "Turning Off Your Computer" on page 7) and all attached devices.

⚠ CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

3. Disconnect all telephone or network cables from the computer.
4. Press and eject any installed cards from the ExpressCard slot and the 8-in-1 Media Card Reader.
5. Disconnect your computer and all attached devices from their electrical outlets.
6. Disconnect all attached devices from your computer.

⚠ CAUTION: To help prevent damage to the system board, you must remove the battery from the battery bay before you service the computer.

⚠ CAUTION: To avoid damage to the computer, use only the battery designed for this particular computer. Do not use batteries designed for other computers.

7. Remove the battery (see "Removing the Battery Pack" on page 11).
8. Press the power button to ground the system board.

CHAPTER 2: BATTERY PACK

Battery Pack

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Battery Pack

1. Follow the instructions in "Before You Begin" on page 6.
2. Turn the computer over.
3. Slide the battery latch to the unlock position as shown.
4. The battery pack will pop up.
5. Remove the battery pack.

Replacing the Battery Pack

1. Follow the instructions in "Before You Begin" on page 6.
2. Align the battery pack tabs with the slots in the battery bay.
3. Push the battery pack into the battery bay until the battery pack clicks into place.
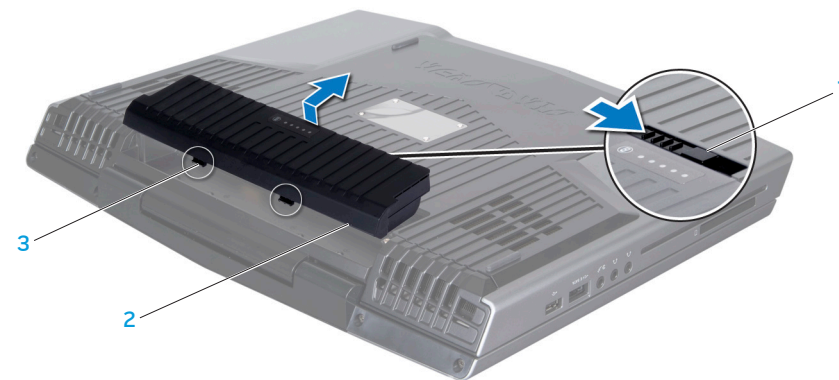
1	battery latch	3	battery pack tabs (2)
2	battery pack		

CHAPTER 3: COMPARTMENT DOOR

Compartment Door

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Compartment Door

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the two screws that secure the compartment door to the computer base.
4. Slide the compartment door towards the front of the computer and then lift it up.

Replacing the Compartment Door

1. Follow the instructions in "Before You Begin" on page 6.
2. Place the compartment door on the computer base and slide it towards the back of the computer.
3. Replace the two screws that secure the compartment door to the computer base.
4. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

1	front of the computer	3	screws (2)
2	compartment door		

CHAPTER 4: HARD DRIVE

Hard Drive

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ WARNING: If you remove the hard drive from the computer when the drive is hot, do not touch the metal housing of the hard drive.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To prevent data loss, turn off your computer (see "Turning Off Your Computer" on page 7) before removing the hard drive. Do not remove the hard drive while the computer is on or in Sleep state.

⚠ CAUTION: Hard drives are extremely fragile. Exercise care when handling the hard drive.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

⚠ NOTE: Dell does not guarantee compatibility or provide support for hard drives from sources other than Dell or Alienware.

⚠ NOTE: If you are installing a hard drive from a source other than Dell or Alienware, you need to install an operating system, drivers, and utilities on the new hard drive.

Removing the Hard Drive

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Loosen the four captive screws that secure the hard-drive assembly.
5. Using the pull-tab, lift the hard-drive assembly out of the hard-drive bay.
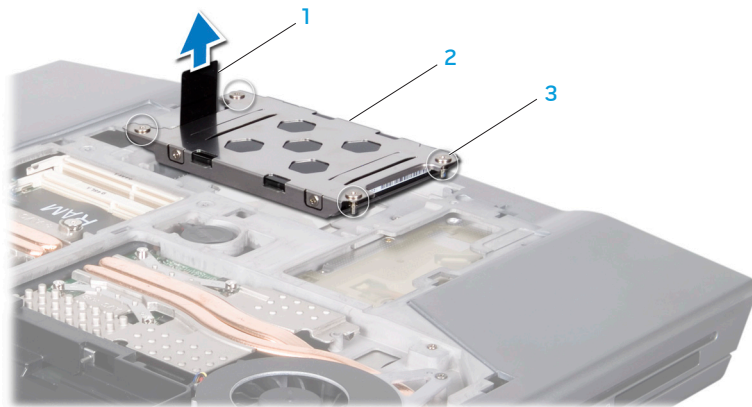
6. Remove the four screws that secure the hard drive to the hard-drive bracket.
7. Lift the hard drive out of the hard-drive bracket.

1	pull-tab	3	captive screws (4)
2	hard-drive assembly		
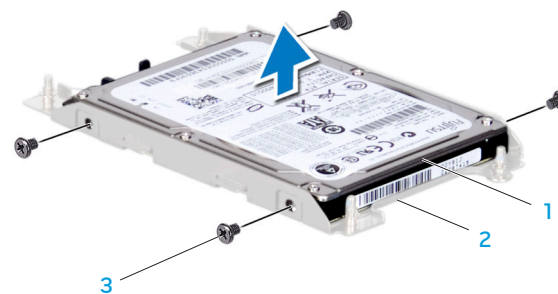
1	hard drive	3	screws (4)
2	hard-drive bracket		

8. Disconnect the interposer from the hard drive.

2

1
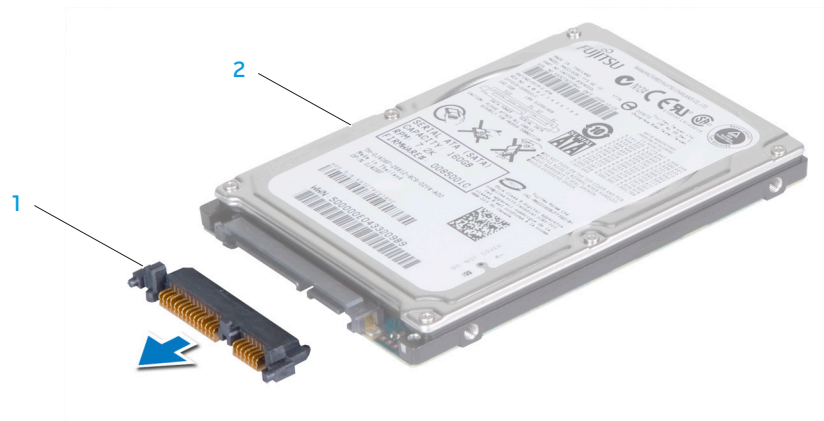
| 1 | interposer | 2 | hard drive |

Replacing the Hard Drive

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the new drive from its packaging.
    Save the original packaging for storing or shipping the hard drive.

⚠️ CAUTION: Use firm and even pressure to slide the drive into place. If you use excessive force, you may damage the connector.

3. Connect the interposer to the hard drive.
4. Place the hard drive in the hard-drive bracket.
5. Replace the four screws that secure the hard drive to the hard-drive bracket.
6. Place the hard-drive assembly in the hard-drive bay.
7. Align and tighten the four captive screws that secure the hard-drive assembly to the hard-drive bay.
8. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
9. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠️ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

10. Install the operating system for your computer, as needed.
11. Install the drivers and utilities for your computer, as needed.

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CHAPTER 5: MEMORY MODULE(S)

You can increase your computer memory by installing memory modules on the system board. See the specifications in your *Mobile Manual* or in the *Comprehensive Specifications* at **support.dell.com/manuals** for information on the memory supported by your computer. Install only memory modules that are supported by your computer.

⚠️ **NOTE:** Memory modules purchased from Dell or Alienware are covered under your computer warranty.

Your computer has two user-accessible SODIMM sockets that can be accessed from the bottom of the computer.

Memory Module(s)

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⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Memory Module(s)

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Loosen the two captive screws that secure the memory-module door to the computer base.
5. Slide the memory-module door to release the tabs and lift the memory-module door out of the computer base.

⚠ CAUTION: **If you need to remove memory modules from both connectors, remove the memory module in the upper connector before you remove the module in the lower connector.**
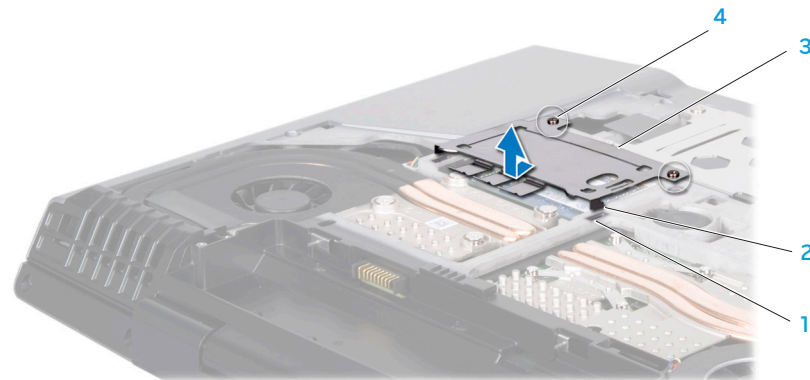
1	slots (2)	3	memory-module door
2	tabs (2)	4	captive screws (2)

⚠ **CAUTION: To prevent damage to the memory module connector(s), do not use tools to spread the memory module spring-locks.**

6. Use your fingertips to carefully spread apart the spring-locks on the memory-module connector until the memory module pops up.
7. Remove the memory module.
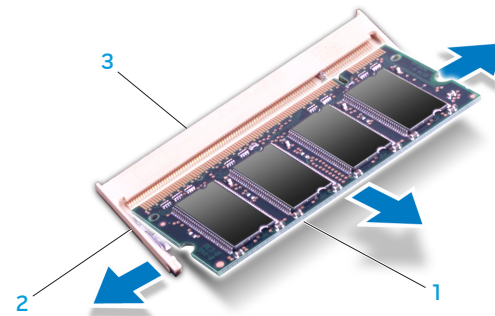
1	memory module	3	memory-module connector
2	spring-locks (2)		

Replacing the Memory Module(s)

⚠ CAUTION: If you need to install memory modules in two connectors, install a memory module in the lower connector before you install a module in the upper connector.

1. Follow the instructions in "Before You Begin" on page 6.
2. Align the notch on the memory module with the tab on the memory-module connector.
3. Insert the module into the memory-module connector at a 45-degree angle, and press the memory module down until it clicks into place. If you do not hear the click, remove the module and reinstall it.
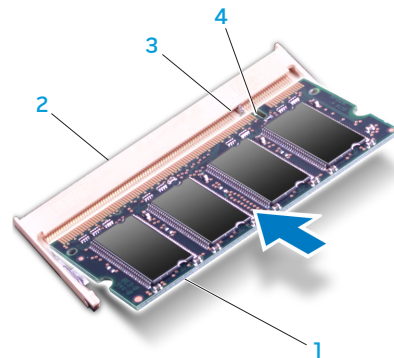
1	memory module	3	tab
2	memory-module connector	4	notch

⚠ CAUTION: If the memory-module door is difficult to close, remove the memory module and reinstall it. Forcing the memory-module door to close may damage your computer.

⚠ NOTE: If the memory module is not installed properly, the computer may not boot.

4. Align and insert the memory-module door tabs into the slots on the computer base.
5. Replace and tighten the two captive screws that secure the memory-module door to the computer base.
6. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
7. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠️ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

8. Turn on the computer.

As the computer boots, it detects the additional memory and automatically updates the system configuration information. To confirm the amount of memory installed in the computer:

Windows Vista®

Click Start 🟦→ **Control Panel**→ **System and Maintenance**.

Windows® 7

Click Start 🟦→ **Control Panel**→ **System and Security**→ **System**.

CHAPTER 6: COIN-CELL BATTERY

Coin-Cell Battery

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

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⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Coin-Cell Battery

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. The coin-cell battery is glued to the computer base, use a plastic scribe to pry it off the computer base.
5. Disconnect the coin-cell battery cable from the system board connector.

Replacing the Coin-Cell Battery

1. Follow the instructions in "Before You Begin" on page 6.
2. Connect the coin-cell battery cable to the system board connector.
3. Use the adhesive on the coin-cell battery and adhere it to the computer base.
4. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
5. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.
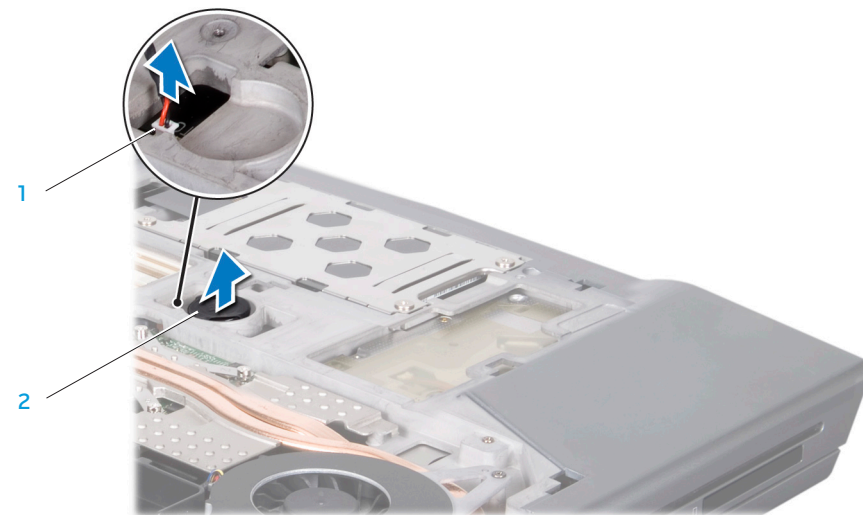
| 1 | coin-cell battery cable connector | 2 | coin-cell battery |

CHAPTER 7: CENTER CONTROL COVER

Center Control Cover

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⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Center Control Cover

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the two screws that secure the center control cover to the computer base.

7. Turn the computer top side up, and open the display as far as possible.

⚠ **CAUTION: Be extremely careful when removing the center control cover. The center control cover along with the cable that attaches it to the system board connector are very fragile.**

8. Pry the center control cover up with a plastic scribe until you see the cable that attaches the center control cover to the system board connector.
9. Turn the center control cover as shown in the illustration.

1

1 center control cover

10. Release the connector latch to disconnect the cable from the center control cover connector.
11. Lift the center control cover off the computer.

Replacing the Center Control Cover

1. Follow the instructions in "Before You Begin" on page 6.
2. Slide the cable into the center control cover connector and push in the connector latch to secure the cable to the connector.
3. Align the center control cover with the computer and snap the cover in place.
4. Turn the computer over and replace the two screws that secure the center control cover to the computer base.
5. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
6. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
7. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
8. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

| 1 | cable | 2 | connector latch |

CHAPTER 8: KEYBOARD

Keyboard

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⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.
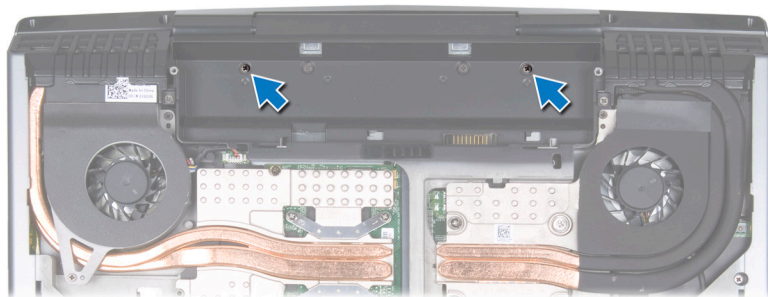
⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Keyboard

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the center control cover (see "Removing the Center Control Cover" on page 30).
7. Remove the three screws that secure the keyboard to the computer.

⚠ **CAUTION: Be extremely careful when removing and handling the keyboard. Failure to do so could result in scratching the display panel. The keyboard along with the cables that attach it to the system board connector are very fragile.**

8. Lift and slide the keyboard until the tabs come out of the slots on the chassis.

1	tabs (5)	3	screws (3)
2	keyboard		

9. Turn the keyboard over.
10. Release the connector latches and disconnect the keyboard cable and keyboard backlight cable from the respective system board connectors.
11. Lift the keyboard off the computer.
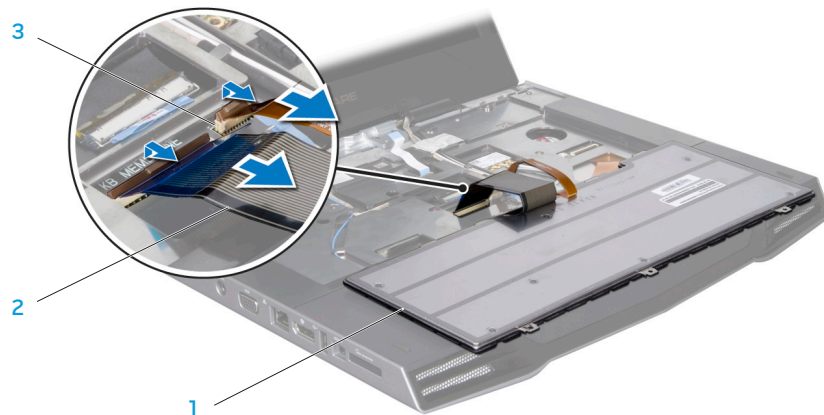
1	keyboard	3	keyboard backlight cable connector
2	keyboard cable		

Replacing the Keyboard

1. Follow the instructions in "Before You Begin" on page 6.
2. Slide the keyboard cable and the keyboard backlight cable into the respective system board connectors and push down the connector latches to secure the cables to the connectors.
3. Align the tabs on the keyboard with the slots on the chassis.
4. Replace the three screws that secure the keyboard to the computer base.
5. Replace the center control cover (see "Replacing the Center Control Cover" on page 31).
6. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
7. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
8. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
9. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

CHAPTER 9: PALM REST

Palm Rest

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Palm Rest

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the two screws that secure the palm rest to the computer base.

7. Turn the computer top side up, and open the display as far as possible.

⚠ **CAUTION: Be extremely careful when removing the palm rest. The palm rest along with the cable that connects the touch pad to the system board connector are very fragile.**

8. Slide and lift the palm rest out as shown in the illustration.

1 palm rest

9. Ease the palm rest up until you see the cable that connects the touch pad to the system board connector.

10. Turn the palm rest over and release the connector latch on the system board connector.
11. Pull on the pull-tab to disconnect the cable from the system board connector.
12. Lift the palm rest off the computer.

Replacing the Palm Rest

1. Follow the instructions in "Before You Begin" on page 6.
2. Slide the touch pad cable into the system board connector and push down the connector latch to secure the cable to the connector.
3. Press and slide the palm rest into position.
4. Turn the computer over and replace the two screws that secure the palm rest to the computer base.
5. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
6. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
7. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
8. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠ **CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**

| 1 | touch pad | 3 | pull-tab |
| 2 | palm rest | 4 | connector latch |

CHAPTER 10: AIR VENTS

Air Vents

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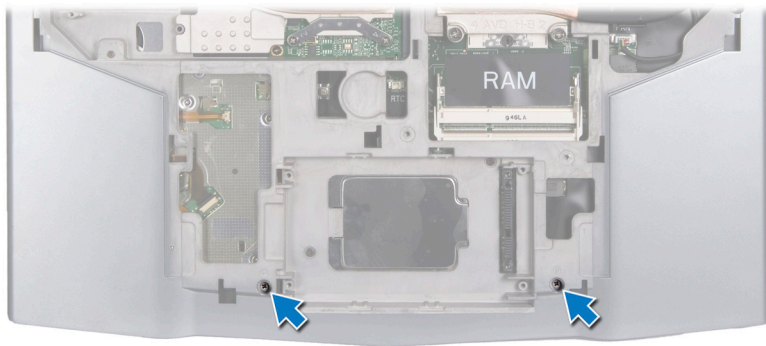
⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Air Vents

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the center control cover (see "Removing the Center Control Cover" on page 30).
7. Remove the four screws that secure the air vents to the computer base.

1

1   screws (4)

8. Turn the computer over and remove the two screws from the bottom of the computer.
9. Pull the air vents out of the computer.
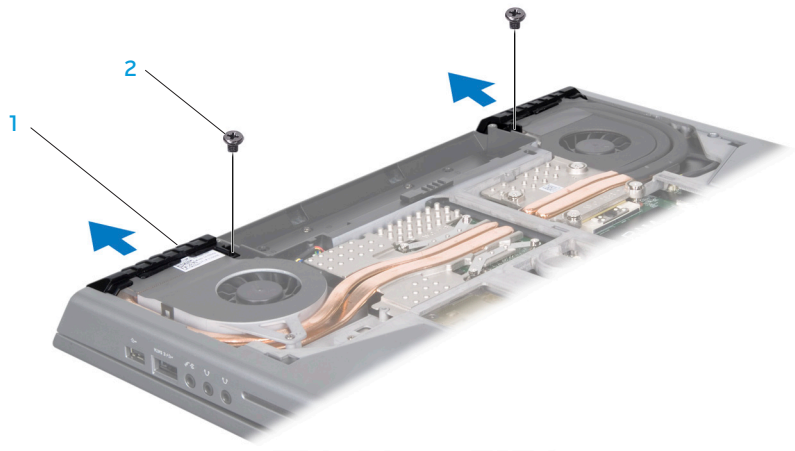
1   air vents (2)   2   screws (2)

Replacing the Air Vents

1. Follow the instructions in "Before You Begin" on page 6.
2. Replace the air vents on the computer base.
3. Replace the two screws that secure the air vents to the bottom of the computer.
4. Turn the computer over and replace the four screws that secure the air vents to the computer base.
5. Replace the center control cover (see "Replacing the Center Control Cover" on page 31).
6. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
7. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
8. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
9. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

⟨Aurebesh script⟩
CHAPTER 11: WIRELESS MINI-CARD(S)

If you ordered a wireless Mini-Card with your computer, the card is already installed.

Your computer supports the following types of cards:

- Wireless Local Area Network (WLAN) — Half Mini-Card
- Wireless Personal Area Network (WPAN) or Internal Card with Bluetooth® Wireless Technology — Full Mini-Card

⚠ **NOTE:** The WLAN slot supports a half Mini-Card.

⚠ **NOTE:** Depending on the configuration of the computer when it was sold, one or more of the Mini-Card slots may not have Mini-Cards installed in them.

Wireless Mini-Card(s)

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Half Mini-Card

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 8).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the center control cover (see "Removing the Center Control Cover" on page 30).
7. Remove the keyboard (see "Removing the Keyboard" on page 34).
8. Disconnect the antenna cables from the half Mini-Card.
9. Push out the securing clips until the half Mini-Card pops up.
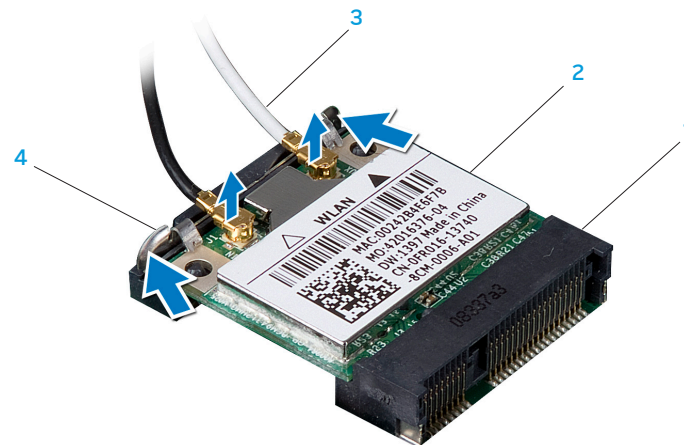
1	system board connector	3	antenna cables (2 or 3)
2	half Mini-Card	4	securing clips (2)

10. Remove the half Mini-Card from the system board connector.

⚠ CAUTION: When the half Mini-Card is not in the computer, store it in protective antistatic packaging. For more information, see "Protecting Against Electrostatic Discharge" in the safety information that shipped with your computer.

Replacing the Half Mini-Card

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the new half Mini-Card from its packaging.

⚠️ **CAUTION: Use firm and even pressure to slide the card into place. If you use excessive force, you may damage the connector.**

3. Align the notch on the card with the tab on the system board connector.
4. Insert the half Mini-Card at a 45-degree angle into the appropriate system board connector. For example, the WLAN card connector is labeled WLAN and so on.
5. Press the other end of the half Mini-Card down into the slot on the system board until it clicks into place.
6. Connect the appropriate antenna cables to the half Mini-Card you are installing. The following table provides the antenna cable color scheme for the half Mini-Card supported by your computer.

Connectors on the Mini-Card	Antenna Cable Color Scheme
WLAN (2 or 3 antenna cables):	
Main WLAN (white triangle)	white
Auxiliary WLAN (black triangle)	black
MIMO WLAN (gray triangle) (optional)	gray

7. Replace the keyboard (see "Replacing the Keyboard" on page 35).
8. Replace the center control cover (see "Replacing the Center Control Cover" on page 31).
9. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 21).
10. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
11. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
12. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

Removing the Full Mini-Card

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the palm rest (see "Removing the Palm Rest" on page 38).
7. Disconnect the blue antenna cable from the full Mini-Card.
8. Push out the securing clips until the full Mini-Card pops up.
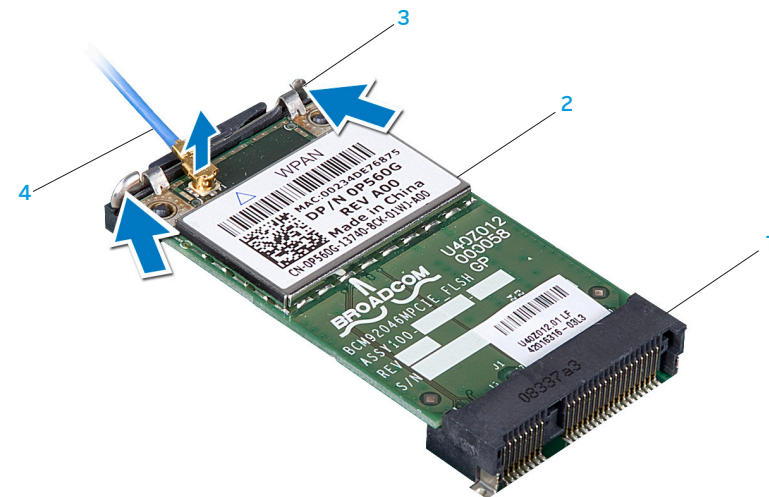
1	system board connector	3	securing clips (2)
2	full Mini-Card	4	antenna cable

9. Remove the full Mini-Card from the system board connector.

⚠️ CAUTION: When the full Mini-Card is not in the computer, store it in protective antistatic packaging. For more information, see "Protecting Against Electrostatic Discharge" in the safety information that shipped with your computer.

Replacing the Full Mini-Card

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the new full Mini-Card from its packaging.

⚠ **CAUTION: Use firm and even pressure to slide the card into place. If you use excessive force, you may damage the connector.**

3. Align the notch on the card with the tab on the connector.
4. Insert the full Mini-Card at a 45-degree angle into the appropriate system board connector. For example, the WPAN card connector is labeled WPAN and so on.
5. Press the other end of the full Mini-Card down into the slot on the system board until it clicks into place.
6. Connect the blue antenna cable to the full Mini-Card you are installing.
7. Replace the palm rest (see "Replacing the Palm Rest" on page 39).

8. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
9. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
10. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
11. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠ **CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**

12. Install the drivers and utilities for your computer, as required.

⚠ **NOTE:** If you are installing a communication card from a source other than Dell or Alienware, you must install the appropriate drivers and utilities.

CHAPTER 12: PROCESSOR FAN AND HEAT SINK ASSEMBLY

Processor Fan and Heat Sink Assembly

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Processor Fan and Heat Sink Assembly

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the center control cover (see "Removing the Center Control Cover" on page 30).
7. Remove the right air-vent (see "Removing the Air Vents" on page 42).
8. Loosen the captive screw that secures the processor fan and heat sink assembly to the computer base.
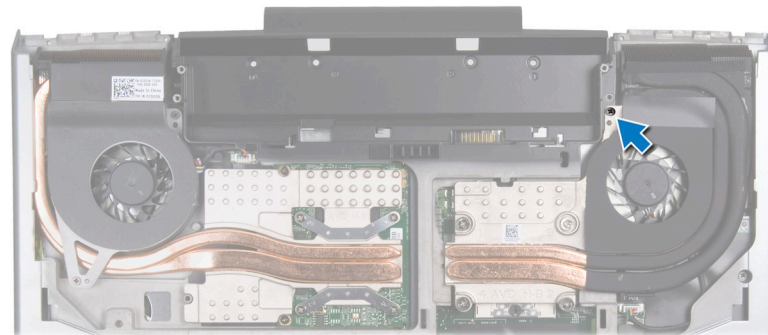
9. Disconnect the processor fan and heat sink assembly cable from the system board connector.
10. In sequential order (indicated on the processor fan and heat sink assembly), loosen the four captive screws that secure the processor fan and heat sink assembly to the system board.
11. Lift the processor fan and heat sink assembly off the system board.
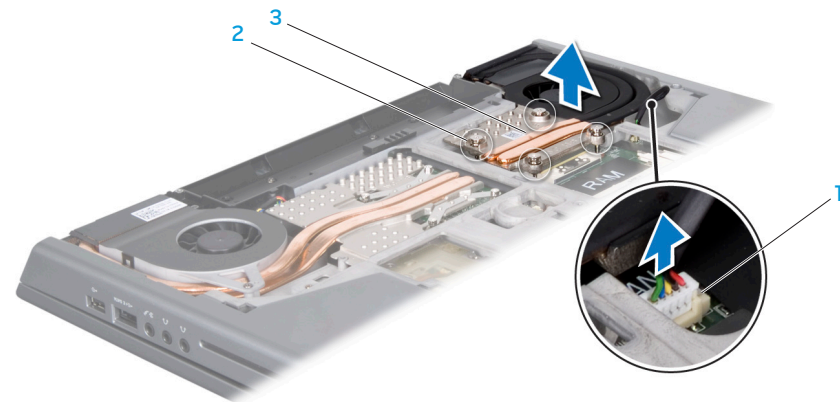
1	processor fan and heat sink assembly cable connector	3	processor fan and heat sink assembly
2	captive screws (4)		

Replacing the Processor Fan and Heat Sink Assembly

1. Follow the instructions in "Before You Begin" on page 6.
2. Peel the backing off the thermal cooling pads attached to the new processor fan and heat sink assembly.

⚠ **NOTE:** If the processor fan and heat sink assembly is replaced, the thermal cooling pads will be attached to the new processor fan and heat sink assembly. Do not reuse the old thermal cooling pads.

3. Place the processor fan and heat sink assembly on the system board.
4. Align the four captive screws on the processor heat sink with the screw holes on the system board and tighten the screws in sequential order (indicated on the processor fan and heat sink assembly).
5. Tighten the screw that secures the processor fan and heat sink assembly to the computer base.
6. Connect the processor fan and heat sink assembly cable to the system board connector.

7. Replace the right air-vent (see "Replacing the Air Vents" on page 43).
8. Replace the center control cover (see "Replacing the Center Control Cover" on page 31).
9. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
10. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
11. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
12. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠ **CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**

CHAPTER 13: PROCESSOR

Processor

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To prevent intermittent contact between the ZIF-socket cam screw and the processor when removing or replacing the processor, press to apply slight pressure to the center of the processor while turning the cam screw.

⚠ CAUTION: To avoid damage to the processor, hold the screwdriver so that it is perpendicular to the processor when turning the cam screw.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Processor

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the center control cover (see "Removing the Center Control Cover" on page 30).
7. Remove the right air-vent (see "Removing the Air Vents" on page 42).
8. Remove the processor fan and heat sink assembly (see "Removing the Processor Fan and Heat Sink Assembly" on page 52).

⚠️ **CAUTION: When removing the processor, pull it straight up. Be careful not to bend the pins on the processor.**

9. To loosen the ZIF socket, use a small flat-blade screwdriver and rotate the ZIF-socket cam screw counterclockwise until it comes to the cam stop. The ZIF-socket cam screw secures the processor to the system board. Take note of the arrow on the ZIF-socket cam screw.
10. Lift the processor off the ZIF socket.
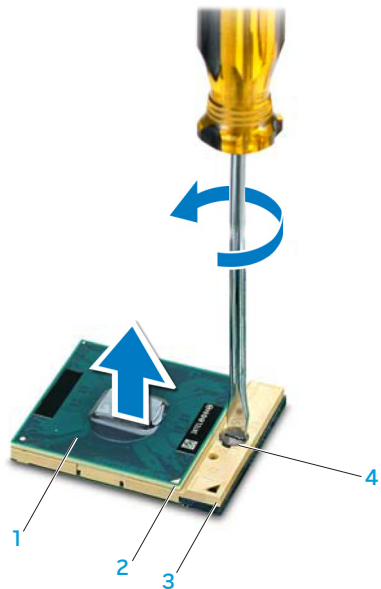
1	processor	3	ZIF socket
2	pin-1 corner of processor	4	ZIF-socket cam screw

Replacing the Processor

1. Follow the instructions in "Before You Begin" on page 6.

⚠️ **CAUTION: Ensure that the cam lock is in the fully open position before seating the processor. Seating the processor properly in the ZIF socket does not require force.**

⚠️ **CAUTION: A processor that is not properly seated can result in an intermittent connection or permanent damage to the processor and ZIF socket.**

2. Align the pin-1 corner of the processor so that it points to the triangle on the ZIF socket, and insert the processor into the ZIF socket.
   When the processor is correctly seated, all four corners are aligned at the same height. If one or more corners of the processor are higher than the others, the processor is not seated correctly.

⚠️ **CAUTION: To prevent intermittent contact between the ZIF-socket cam screw and the processor when removing or replacing the processor, press to apply slight pressure to the center of the processor while turning the cam screw.**

3. Tighten the ZIF socket by turning the cam screw clockwise to secure the processor to the system board.

⚠️ **CAUTION: If the processor, processor fan and heat sink assembly, or system board is replaced, use the thermal cooling pads provided in the replacement kit to ensure that thermal conductivity is achieved. Do not reuse the old thermal cooling pads.**

4. Peel the backing off the new thermal cooling pads in the kit and adhere the pads to the portions of the processor fan and heat sink assembly that cover the processor.

5. Replace the processor fan and heat sink assembly (see "Replacing the Processor Fan and Heat Sink Assembly" on page 54).

6. Replace the right air-vent (see "Replacing the Air Vents" on page 43).

7. Replace the center control cover (see "Replacing the Center Control Cover" on page 31).

8. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).

9. Replace the hard drive (see "Replacing the Hard Drive" on page 18).

10. Replace the compartment door (see "Replacing the Compartment Door" on page 14).

11. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠️ **CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**

CHAPTER 14: GRAPHICS CARD FAN

Graphics Card Fan

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Graphics Card Fan

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Loosen the two captive screws that secure the graphics card fan to the computer base.
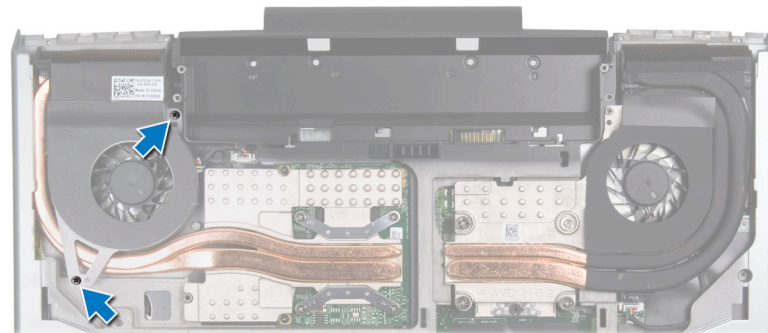
7. Disconnect the graphics card fan cable from the system board connector.
8. Lift the graphics card fan off the computer base.
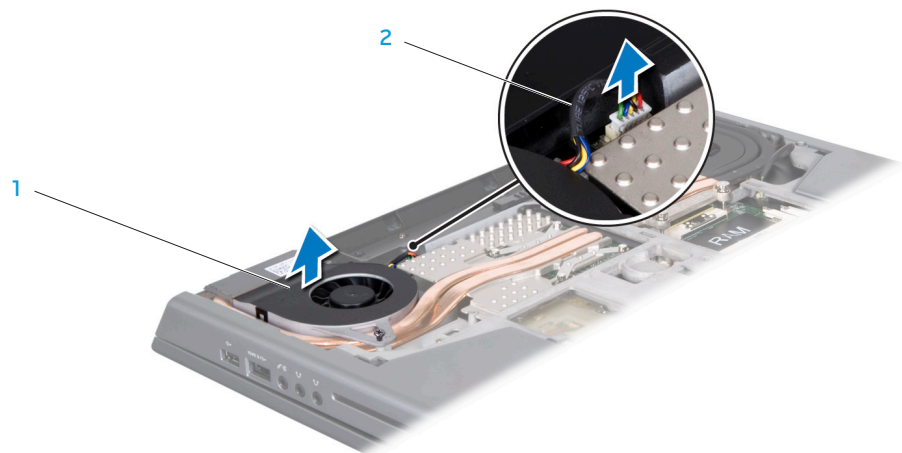
| 1 | graphics card fan | 2 | graphics card fan cable |

Replacing the Graphics Card Fan

1. Follow the instructions in "Before You Begin" on page 6.
2. Place the graphics card fan in the computer base.
3. Connect the graphics card fan cable to the system board connector.
4. Tighten the two captive screws that secure the graphics card fan to the computer base.
5. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
6. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
7. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
8. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

CHAPTER 15: GRAPHICS CARD HEAT SINK

Graphics Card Heat Sink

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Graphics Card Heat Sink

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the center control cover (see "Removing the Center Control Cover" on page 30).
7. Remove the left air-vent (see "Removing the Air Vents" on page 42).
8. Remove the graphics card fan (see "Removing the Graphics Card Fan" on page 61).
9. In sequential order (indicated on the graphics card heat sink), loosen the four captive screws that secure the graphics card heat sink to the graphics card.
10. Slide and lift the graphics card heat sink off the computer base.
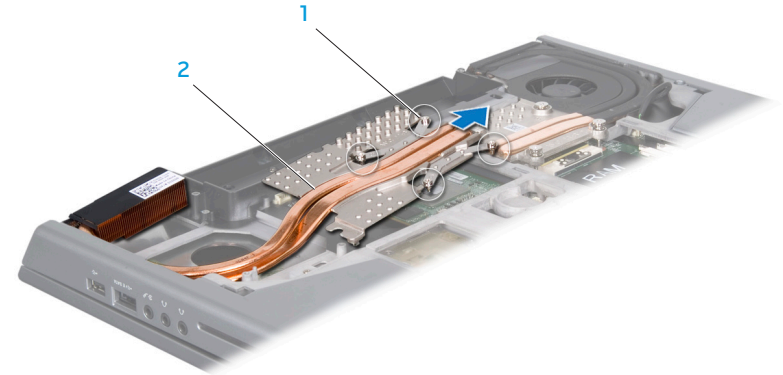
| 1 | captive screws (4) | 2 | graphics card heat sink |

Replacing the Graphics Card Heat Sink

1. Follow the instructions in "Before You Begin" on page 6.
2. Place the graphics card heat sink in the computer base.
3. Align the four captive screws on the graphics card heat sink with the screw holes on the graphics card and tighten the screws in sequential order (indicated on the graphics card heat sink).
4. Replace the graphics card fan (see "Replacing the Graphics Card Fan" on page 62).
5. Replace the left air-vent (see "Replacing the Air Vents" on page 43).
6. Replace the center control cover (see "Replacing the Center Control Cover" on page 31).
7. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
8. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
9. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
10. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

CHAPTER 16: GRAPHICS CARD

Graphics Card

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Graphics Card

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the center control cover (see "Removing the Center Control Cover" on page 30).
7. Remove the left air-vent (see "Removing the Air Vents" on page 42).
8. Remove the graphics card fan (see "Removing the Graphics Card Fan" on page 61).
9. Remove the graphics card heat sink (see "Removing the Graphics Card Heat Sink" on page 65).
10. Remove the two screws that secure the graphics card to the system board.
11. Remove the graphics card from the system board connector.
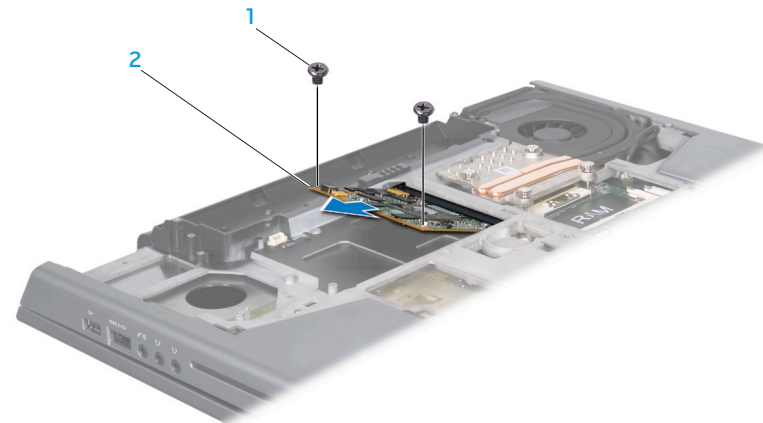
| 1 | screws (2) | 2 | graphics card |

Replacing the Graphics Card

1. Follow the instructions in "Before You Begin" on page 6.
2. Insert the graphics card at a 45-degree angle into the system board connector.
3. Replace the two screws that secure the graphics card to the system board.
4. Replace the graphics card heat sink (see "Replacing the Graphics Card Heat Sink" on page 66).
5. Replace the graphics card fan (see "Replacing the Graphics Card Fan" on page 62).
6. Replace the left air-vent (see "Replacing the Air Vents" on page 43).
7. Replace the center control cover (see "Replacing the Center Control Cover" on page 31).
8. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
9. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
10. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
11. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠️ **CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**

CHAPTER 17: DISPLAY

Display

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

⚠ CAUTION: To avoid damage to the display, you must not disassemble your Edge-to-Edge display assembly in the field.

Display Assembly

Removing the Display Assembly

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the center control cover (see "Removing the Center Control Cover" on page 30).
7. Remove the keyboard (see "Removing the Keyboard" on page 34).
8. Remove the palm rest (see "Removing the Palm Rest" on page 38).
9. Remove the two screws from the battery bay.
10. Turn the computer top side up and open the display as far as possible.
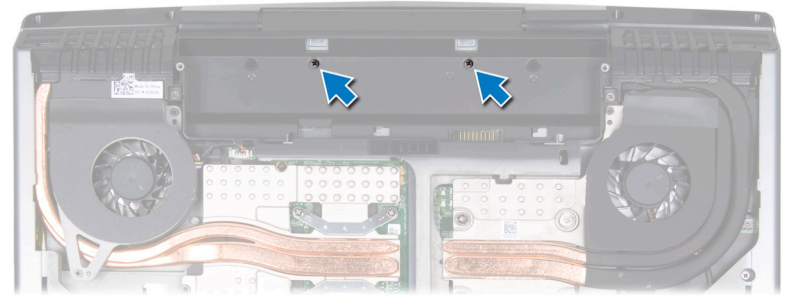
11. Disconnect the antenna cables from the respective Mini-Cards and remove these cables from their routing guides.
12. Disconnect the display cable and the camera cable from the respective system board connectors, and remove these cables from their routing guides.
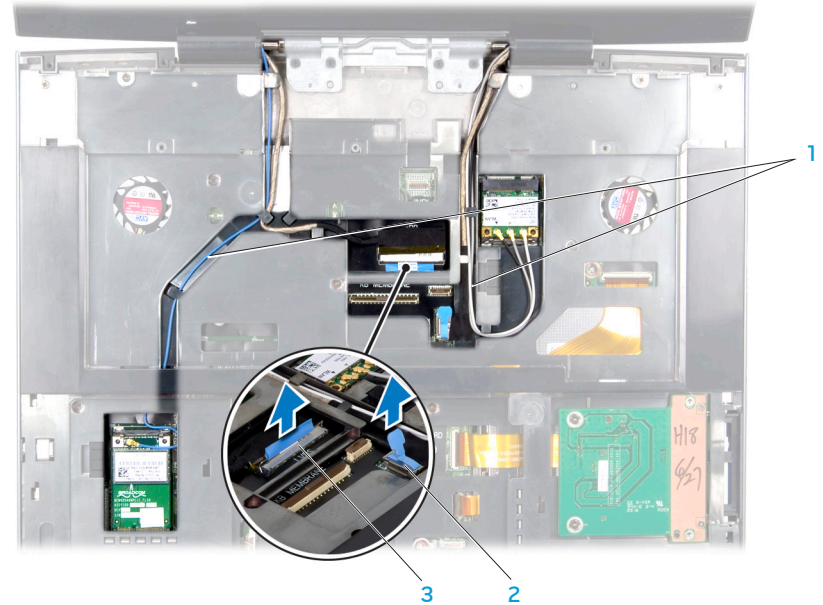
1	**Mini-Card antenna cables**	**3**	**display cable connector**
2	**camera cable connector**		

13. Remove the four screws (two from each hinge) that secure the display assembly to the computer base.
14. Tilt the display assembly towards the computer base at a 45-degree angle and lift the display assembly off the computer.
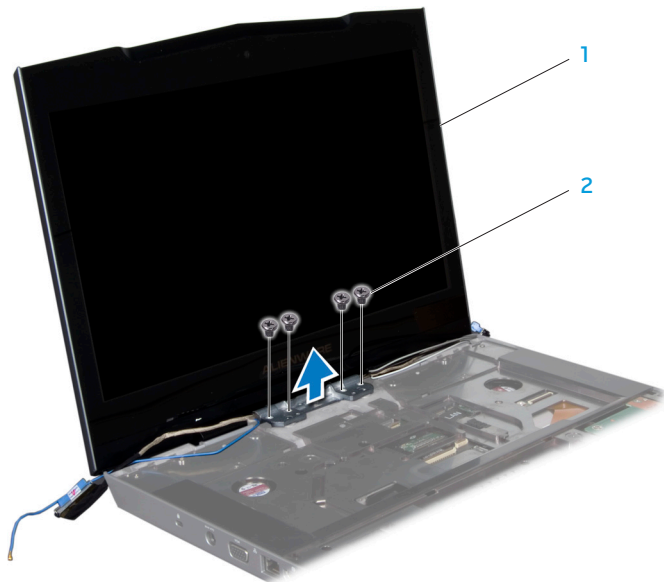
| 1 | display assembly | 2 | screws (4) |

Replacing the Display Assembly

1. Follow the instructions in "Before You Begin" on page 6.
2. Align the screw holes on the display hinges with the screw holes on the computer base.
3. Replace the four screws (two on each hinge) that secure the display assembly to the computer base.
4. Route the Mini-Card antenna cables through the routing guides and connect them to the respective Mini-Cards.
5. Route the display and camera cables through the routing guides and connect them to the system board connectors.
6. Replace the two screws in the battery bay.
7. Replace the palm rest (see "Replacing the Palm Rest" on page 39).
8. Replace the keyboard (see "Replacing the Keyboard" on page 35).
9. Replace the center control cover (see "Replacing the Center Control Cover" on page 31).
10. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
11. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
12. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
13. Replace the battery pack (see "Replacing the Battery Pack" on page 8).

⚠️ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

Display Hinge Cover

Removing the Display Hinge Cover

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the display assembly (see "Removing the Display Assembly" on page 73).
3. Remove the five screws that secure the display hinge cover to the display assembly.
4. Pry the display hinge cover up with a plastic scribe.
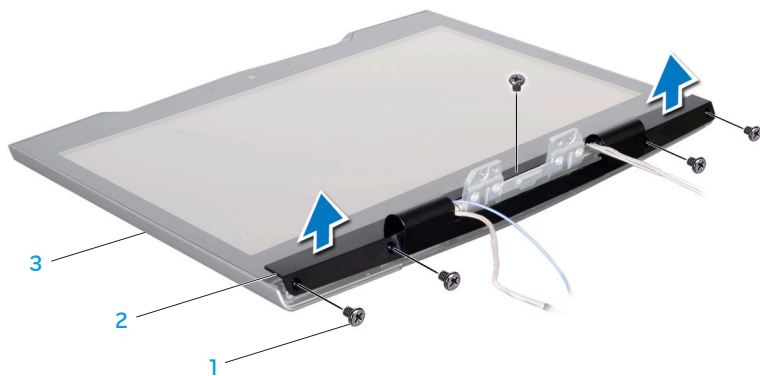
Replacing the Display Hinge Cover

1. Follow the instructions in "Before You Begin" on page 6.
2. Route the antenna, display, and camera cables through the display hinge cover.
3. Align the screw holes on the display hinge cover with the display back cover.
4. Replace the five screws that secure the display hinge cover to the display assembly.
5. Replace the display assembly (see "Replacing the Display Assembly" on page 75).

⚠ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

1	screws (5)	3	display assembly
2	display hinge cover		

Display Panel

Removing the Display Panel

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the display assembly (see "Removing the Display Assembly" on page 73).
3. Remove the display hinge cover (see "Removing the Display Hinge Cover" on page 76).
4. Remove the seven screws that secure the display panel to the display back cover.

⚠️ **NOTE:** Use a dry, lint-free, soft cloth while removing or replacing the display panel, to avoid smudging the display panel.

5. Slide the display panel towards the display hinges, to release it from the display back cover.
6. Lift the display panel up and move it towards the top of the display back cover.

1	display hinges (2)	3	screws (7)
2	display panel	4	display back cover

7. Disconnect the AlienHead cable connector and lift the display panel off the display back cover.

Replacing the Display Panel

1. Follow the instructions in "Before You Begin" on page 6.
2. Connect the AlienHead cable to the connector.

⚠ **NOTE:** Use a dry, lint-free, soft cloth while removing or replacing the display panel, to avoid smudging the display panel.

3. Replace the display panel and slide the display panel towards the top of the display back cover.
4. Replace the seven screws that secure the display panel to the display back cover.
5. Replace the display hinge cover (see "Replacing the Display Hinge Cover" on page 76).
6. Replace the display assembly (see "Replacing the Display Assembly" on page 75).

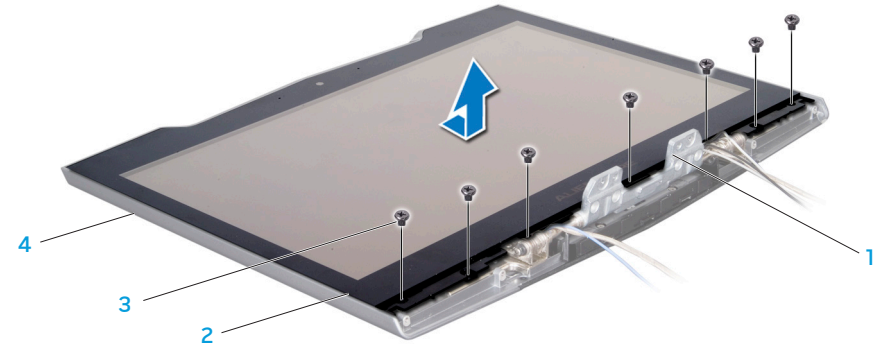| 1 | AlienHead cable connector | 2 | display panel |

AlienHead Board

Removing the AlienHead Board

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the display assembly (see "Removing the Display Assembly" on page 73).
3. Remove the display hinge cover (see "Removing the Display Hinge Cover" on page 76).
4. Remove the display panel (see "Removing the Display Panel" on page 77).
5. Remove the two screws that secure the AlienHead board to the display back cover.
6. Lift the top of the AlienHead board to release it from the tabs that hold it in place.
7. Slide the AlienHead board down and lift it off the display back cover.
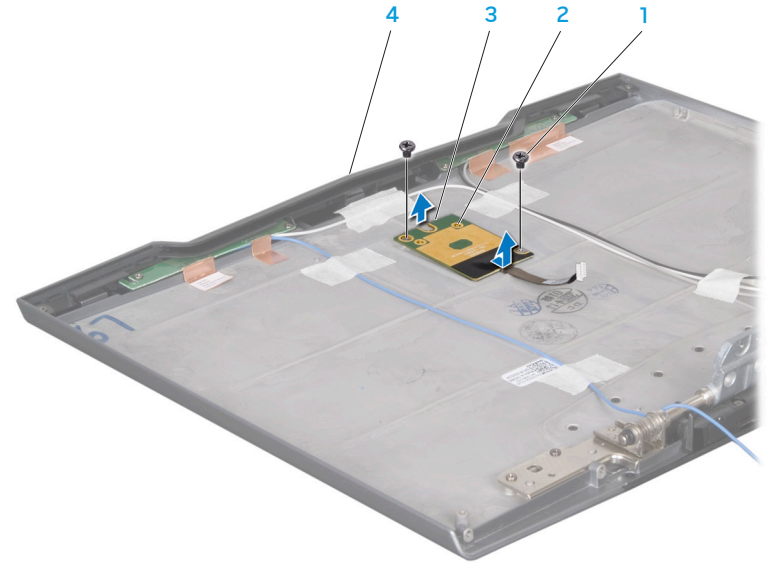
1	screws (2)	3	top of the AlienHead board
2	tabs (2)	4	display back cover

Replacing the AlienHead Board

1. Follow the instructions in "Before You Begin" on page 6.
2. Align the AlienHead board with the tabs on the display back cover. Gently press and slide the AlienHead board into place.
3. Replace the two screws that secure the AlienHead board to the display back cover.
4. Replace the display panel (see "Replacing the Display Panel" on page 78).
5. Replace the display hinge cover (see "Replacing the Display Hinge Cover" on page 76).
6. Replace the display assembly (see "Replacing the Display Assembly" on page 75).

⚠ **CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.**

CHAPTER 18: MAGNESIUM COVER

Magnesium Cover

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Magnesium Cover

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the graphics card fan (see "Removing the Graphics Card Fan" on page 61).
7. Remove the four screws that secure the magnesium cover to the computer base.
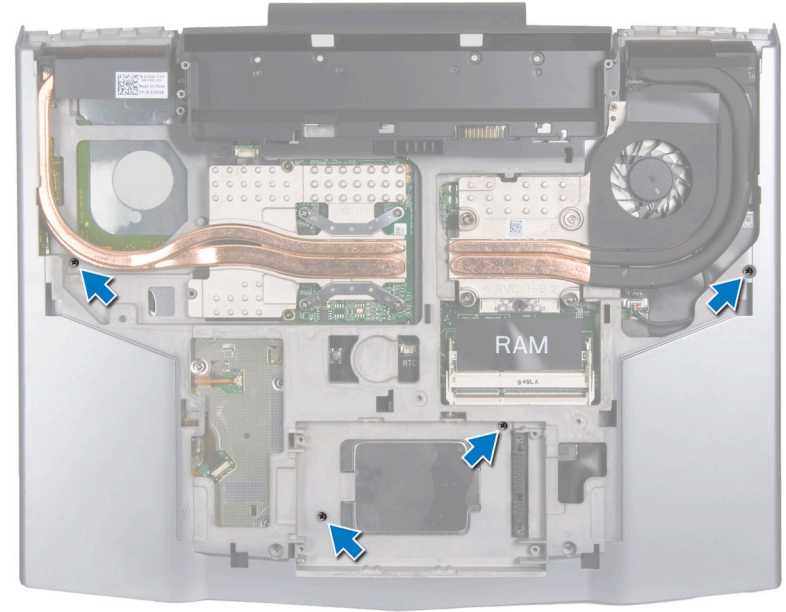
8. Remove the center control cover (see "Removing the Center Control Cover" on page 30).
9. Remove the keyboard (see "Removing the Keyboard" on page 34).
10. Remove the palm rest (see "Removing the Palm Rest" on page 38).
11. Remove the display assembly (see "Removing the Display Assembly" on page 73).
12. Release the ExpressCard connector latch and disconnect the ExpressCard cable from the system board connector.
13. Press and eject any installed cards from the ExpressCard slot and the 8-in-1 Media Card Reader before removing the magnesium cover.
14. Remove the twelve screws that secure the magnesium cover to the computer base.
15. Lift the magnesium cover off the computer.
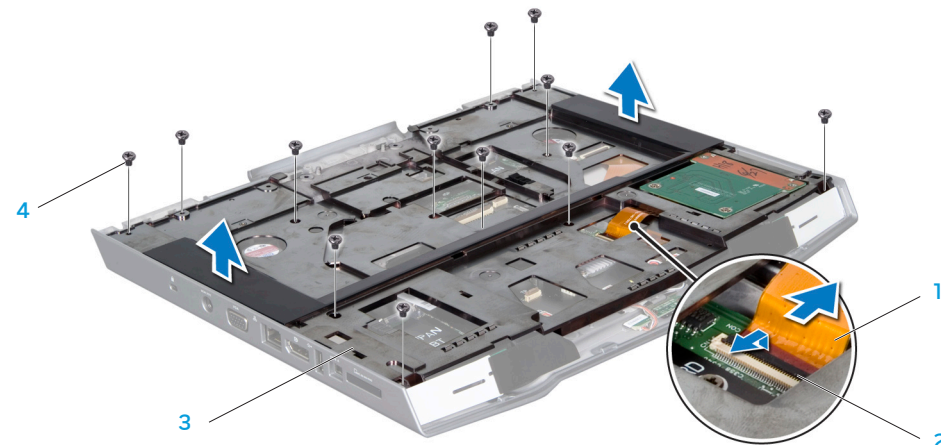
| 1 | ExpressCard cable | 3 | magnesium cover |
| 2 | ExpressCard connector latch | 4 | screws (12) |

Replacing the Magnesium Cover

1. Follow the instructions in "Before You Begin" on page 6.
2. Replace the magnesium cover on the computer base.
3. Replace the twelve screws that secure the magnesium cover to the computer base.
4. Replace any cards that were ejected from the ExpressCard slot and the 8-in-1 Media Card Reader.
5. Connect the ExpressCard cable to the system board connector and push down the ExpressCard connector latch to secure the ExpressCard cable.
6. Replace the display assembly (see "Replacing the Display Assembly" on page 75).
7. Replace the palm rest (see "Replacing the Palm Rest" on page 39).
8. Replace the keyboard (see "Replacing the Keyboard" on page 35).
9. Replace the center control cover (see "Replacing the Center Control Cover" on page 31).

10. Replace the four screws that secure the magnesium cover to the computer base.
11. Replace the graphics card fan (see "Replacing the Graphics Card Fan" on page 62).
12. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
13. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
14. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
15. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠️ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

CHAPTER 19: INPUT/OUTPUT BOARD

Input/Output Board

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Input/Output Board

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the center control cover (see "Removing the Center Control Cover" on page 30).
7. Remove the keyboard (see "Removing the Keyboard" on page 34).
8. Remove the palm rest (see "Removing the Palm Rest" on page 38).
9. Remove the display assembly (see "Removing the Display Assembly" on page 73).
10. Remove the magnesium cover (see "Removing the Magnesium Cover" on page 83).
11. Release the audio cable connector latch to disconnect the audio cable from the system board connector.
12. Remove the two screws that secure the input/output board to the computer base.
13. Tilt the input/output board at an angle and lift it out of the computer base.
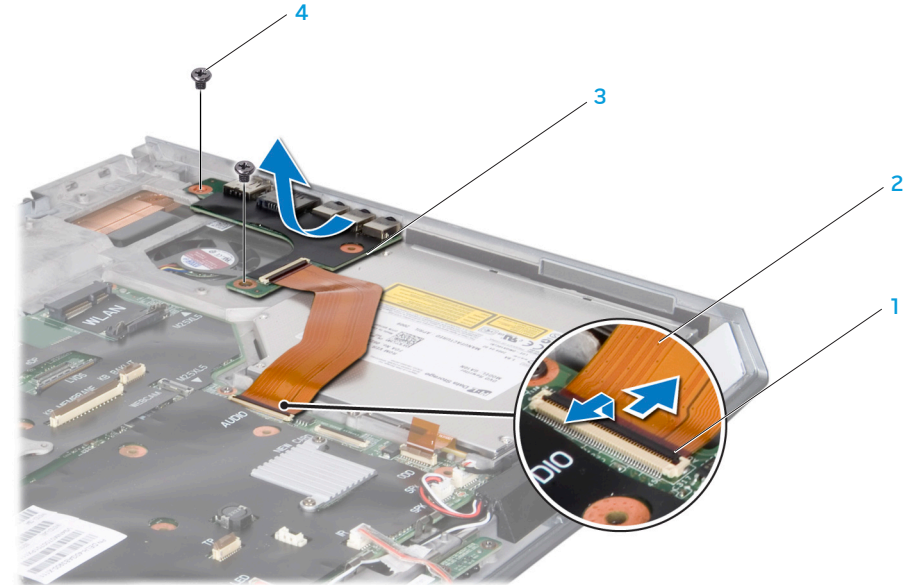
| 1 | audio cable connector latch | 3 | input/output board |
| 2 | audio cable | 4 | screws (2) |

Replacing the Input/Output Board

1. Follow the instructions in "Before You Begin" on page 6.
2. Align the connectors on the input/output board with the slots on the computer.
3. Replace the two screws that secure the input/output board to the computer base.
4. Connect the audio cable to the system board connector and push down the audio cable connector latch to secure the audio cable.
5. Replace the magnesium cover (see "Replacing the Magnesium Cover" on page 85).
6. Replace the display assembly (see "Replacing the Display Assembly" on page 75).
7. Replace the palm rest (see "Replacing the Palm Rest" on page 39).
8. Replace the keyboard (see "Replacing the Keyboard" on page 35).

9. Replace the center control cover (see "Replacing the Center Control Cover" on page 31).
10. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
11. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
12. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
13. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠️ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

CHAPTER 20: CONSUMER IR BOARD

Consumer IR Board

⚠️ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠️ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠️ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠️ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠️ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Consumer IR Board

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the center control cover (see "Removing the Center Control Cover" on page 30).
7. Remove the keyboard (see "Removing the Keyboard" on page 34).
8. Remove the palm rest (see "Removing the Palm Rest" on page 38).
9. Remove the display assembly (see "Removing the Display Assembly" on page 73).
10. Remove the magnesium cover (see "Removing the Magnesium Cover" on page 83).
11. Disconnect the consumer IR board cable from the system board connector.
12. Remove the two screws that secure the consumer IR board to the computer base.
13. Lift the consumer IR board off the computer base.
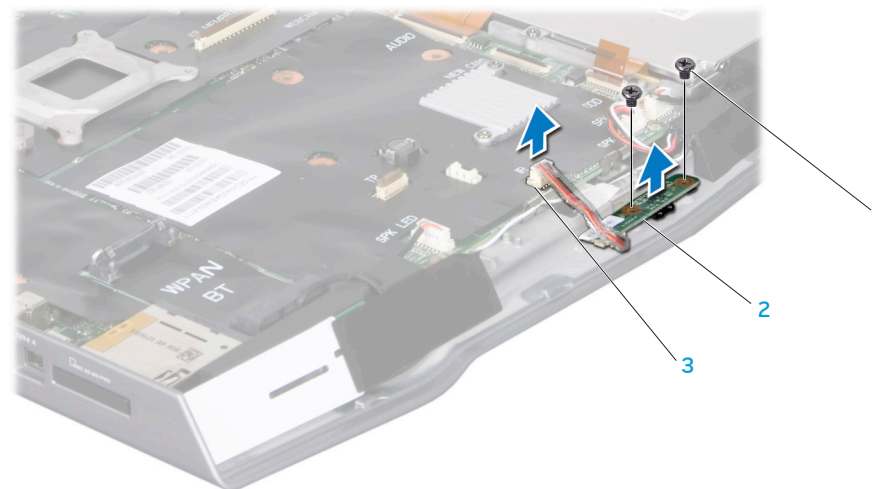
| 1 | screws (2) | 3 | consumer IR board connector |
| 2 | consumer IR board | | |

Replacing the Consumer IR Board

1. Follow the instructions in "Before You Begin" on page 6.
2. Align the consumer IR board with the guide posts on the computer base.
3. Replace the two screws that secure the consumer IR board to the computer base.
4. Connect the consumer IR board cable to the system board connector.
5. Replace the magnesium cover (see "Replacing the Magnesium Cover" on page 85).
6. Replace the display assembly (see "Replacing the Display Assembly" on page 75).
7. Replace the palm rest (see "Replacing the Palm Rest" on page 39).
8. Replace the keyboard (see "Replacing the Keyboard" on page 35).
9. Replace the center control cover (see "Replacing the Center Control Cover" on page 31).
10. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
11. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
12. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
13. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠️ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

CHAPTER 21: OPTICAL DRIVE

Optical Drive

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Optical Drive

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
6. Remove the screw that secures the optical drive to the computer base.

7. Remove the center control cover (see "Removing the Center Control Cover" on page 30).
8. Remove the keyboard (see "Removing the Keyboard" on page 34).
9. Remove the palm rest (see "Removing the Palm Rest" on page 38).
10. Remove the display assembly (see "Removing the Display Assembly" on page 73).
11. Remove the magnesium cover (see "Removing the Magnesium Cover" on page 83).
12. Remove the input/output board (see "Removing the Input/Output Board" on page 88).
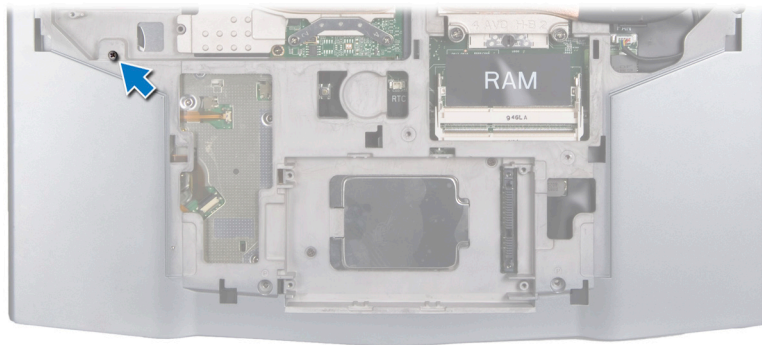
13. Remove the three screws that secure the optical drive to the computer base.
14. Release the connector latch and disconnect the optical-drive cable from the system board connector.
15. Lift the optical drive out of the computer.

16. Remove the five screws that secure the optical drive to the optical-drive bracket and lift the optical-drive bracket out.
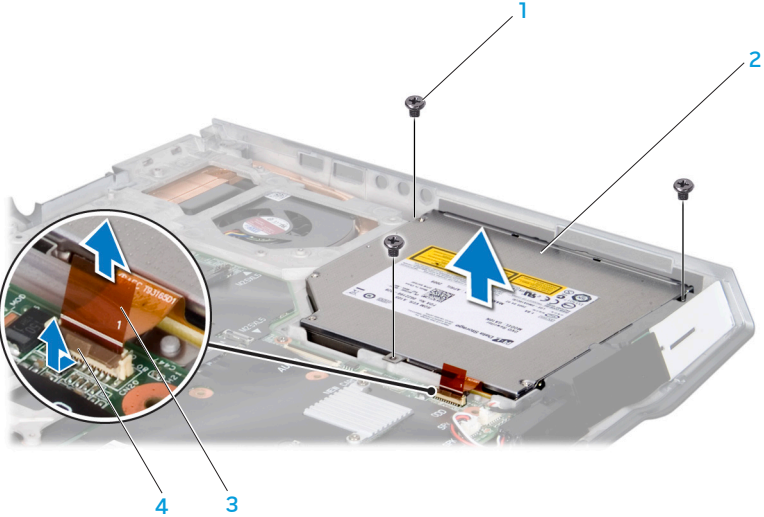
1	screws (3)	3	optical-drive cable
2	optical drive	4	connector latch

1	optical drive	3	screws (5)
2	optical-drive bracket		

17. Disconnect the optical-drive cable from the optical drive.
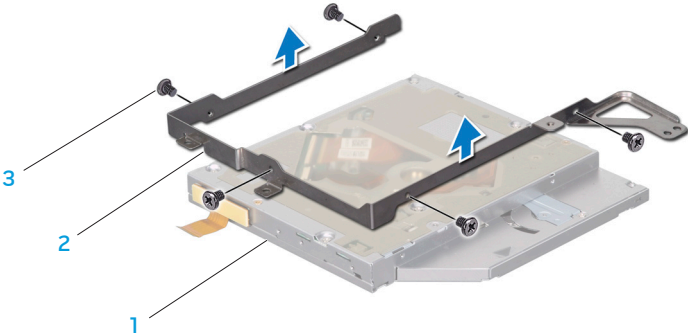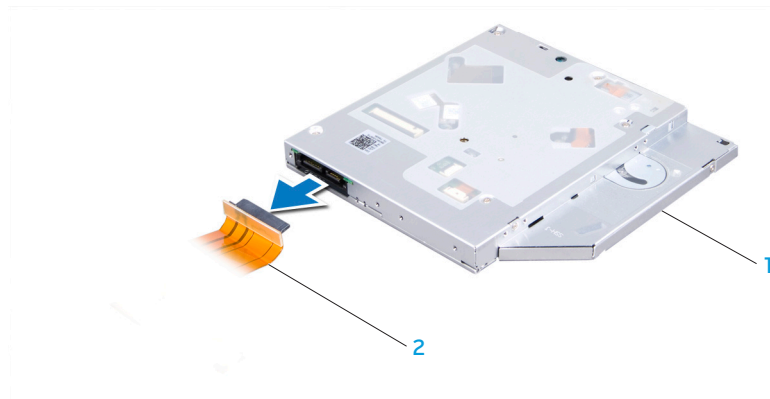
1 optical drive	2 optical-drive cable

Replacing the Optical Drive

1. Follow the instructions in "Before You Begin" on page 6.
2. Connect the optical-drive cable to the optical drive.
3. Replace the five screws that secure the optical drive to the optical-drive bracket.
4. Place the optical drive in the computer base.
5. Slide the optical-drive cable into the system board connector and push down the connector latch to secure the cable to the connector.
6. Replace the three screws that secure the optical drive to the computer base.
7. Replace the input/output board (see "Replacing the Input/Output Board" on page 89).
8. Replace the display assembly (see "Replacing the Display Assembly" on page 75).
9. Replace the magnesium cover (see "Replacing the Magnesium Cover" on page 85).
10. Replace the palm rest (see "Replacing the Palm Rest" on page 39).
11. Replace the keyboard (see "Replacing the Keyboard" on page 35).
12. Replace the center control cover (see "Replacing the Center Control Cover" on page 31).
13. Replace the screw that secures the optical drive to the computer base.
14. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
15. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
16. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
17. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

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CHAPTER 22: SYSTEM BOARD

The system board's BIOS chip contains the Service Tag, which is also visible on a barcode label on the bottom of the computer. The Service Tag has to be entered in the replacement system board's BIOS chip using the **System Setup** utility.

System Board

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

⚠ CAUTION: Handle components and cards by their edges, and avoid touching pins and contacts.

Removing the System Board

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the battery pack (see "Removing the Battery Pack" on page 11).
3. Remove the compartment door (see "Removing the Compartment Door" on page 14).
4. Remove the hard drive (see "Removing the Hard Drive" on page 17).
5. Disconnect the coin-cell battery cable from the system board connector (see "Removing the Coin-Cell Battery on page 27).
6. Remove the memory module(s) (see "Removing the Memory Module(s)" on page 21).
7. Remove the palm rest (see "Removing the Palm Rest" on page 38).
8. Remove the center control cover (see "Removing the Center Control Cover" on page 30).
9. Remove the keyboard (see "Removing the Keyboard" on page 34).
10. Remove the air vents (see "Removing the Air Vents" on page 42).
11. Remove the display assembly (see "Removing the Display Assembly" on page 73).
12. Remove the magnesium cover (see "Removing the Magnesium Cover" on page 21).

13. Remove the half Mini-Card (see "Removing the Half Mini-Card" on page 46).
14. Remove the full Mini-Card (see "Removing the Full Mini-Card" on page 48).
15. Remove the processor fan and heat sink assembly (see "Removing the Processor Fan and Heat Sink Assembly" on page 52).
16. Remove the processor (see "Removing the Processor" on page 57).
17. Remove the graphics card fan (see "Removing the Graphics Card Fan" on page 61).
18. Remove the graphics card heat sink (see "Removing the Graphics Card Heat Sink" on page 65).
19. Remove the graphics card (see "Removing the Graphics Card" on page 69).
20. Disconnect the following cables from their respective system board connectors:

   - audio cable
   - optical-drive cable
   - speaker cable
   - left- and right-speaker light cable
   - consumer IR board cable
21. Remove the five screws that secure the system board to the computer base.
22. Lift the system board at an angle and remove it from the computer base.
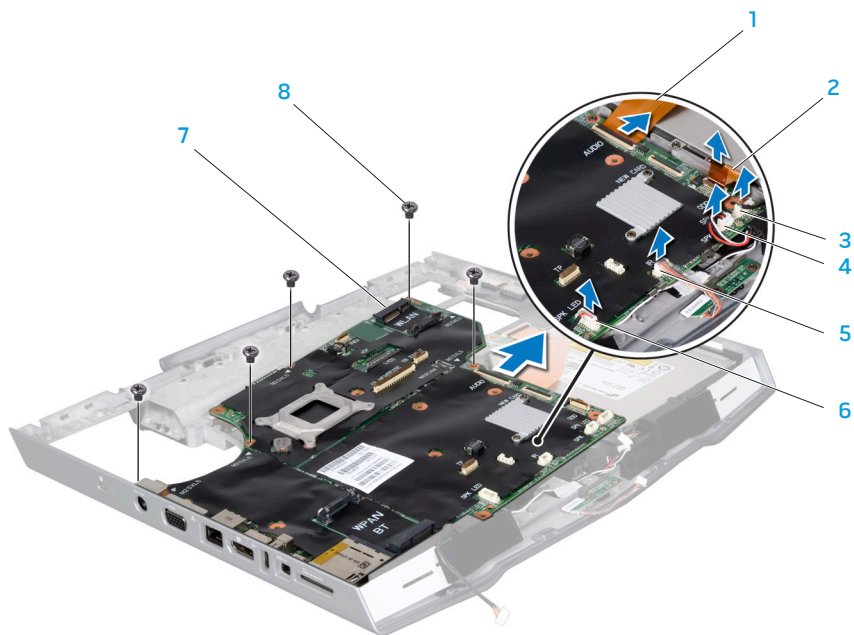
1	audio cable	5	consumer IR board cable connector
2	optical-drive cable	6	left-speaker light cable connector
3	right-speaker light cable connector	7	system board
4	speaker cable connector	8	screws (5)

Replacing the System Board

1. Follow the instructions in "Before You Begin" on page 6.
2. Align the connectors on the system board with the slots on the computer.
3. Replace the five screws that secure the system board to the computer base.
4. Connect the following cables to their respective system board connectors:

   - audio cable
   - optical-drive cable
   - speaker cable
   - left- and right-speaker light cable
   - consumer IR board cable

5. Replace the graphics card (see "Replacing the Graphics Card" on page 70).
6. Replace the graphics card heat sink (see "Replacing the Graphics Card Heat Sink" on page 66).
7. Replace the graphics card fan (see "Replacing the Graphics Card Fan" on page 62).
8. Replace the processor (see "Replacing the Processor" on page 58).
9. Replace the processor fan and heat sink assembly (see "Replacing the Processor Fan and Heat Sink Assembly" on page 54).
10. Replace the full Mini-Card (see "Replacing the Full Mini-Card" on page 49).
11. Replace the half Mini-Card (see "Replacing the Half Mini-Card" on page 47).
12. Replace the display assembly (see "Replacing the Display Assembly" on page 75).
13. Replace the magnesium cover (see "Replacing the Magnesium Cover" on page 85).
14. Replace the air vents (see "Replacing the Air Vents" on page 43).
15. Replace the keyboard (see "Replacing the Keyboard" on page 35).
16. Replace the center control cover (see "Replacing the Center Control Cover" on page 31).
17. Replace the palm rest (see "Replacing the Palm Rest" on page 39).
18. Replace the memory module(s) (see "Replacing the Memory Module(s)" on page 23).
19. Connect the coin-cell battery cable to the system board connector (see "Replacing the Coin-Cell Battery" on page 27).
20. Replace the hard drive (see "Replacing the Hard Drive" on page 18).
21. Replace the compartment door (see "Replacing the Compartment Door" on page 14).
22. Replace the battery pack (see "Replacing the Battery Pack" on page 11).

⚠️ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

23. Turn on the computer.

⚠️ NOTE: After you have replaced the system board, enter the computer Service Tag into the BIOS of the replacement system board.

24. Enter the computer Service Tag in the **Set Service Tag** field of the **System Setup**. For more information, see "System Setup Options" on page 113.

CHAPTER 23: SPEAKERS

Speakers

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.

Removing the Speakers

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the system board (see "Removing the System Board" on page 102).
3. Remove the speaker cables from the routing guides.
4. Lift the speakers off the computer base.

Replacing the Speakers

1. Follow the instructions in "Before You Begin" on page 6.
2. Place the speakers on the computer base.
3. Route the speaker cables into the routing guides.
4. Replace the system board (see "Replacing the System Board" on page 104).

⚠️ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.

1	speakers (2)	2	speaker cables

CHAPTER 24: BATTERY LATCH ASSEMBLY

Battery Latch Assembly

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ WARNING: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and the computer, and remove any other external cables from the computer.

⚠ CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell™ is not covered by your warranty.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as a connector on the back of the computer).

⚠ CAUTION: To help prevent damage to the system board, remove the main battery (see "Removing the Battery Pack" on page 11) before working inside the computer.
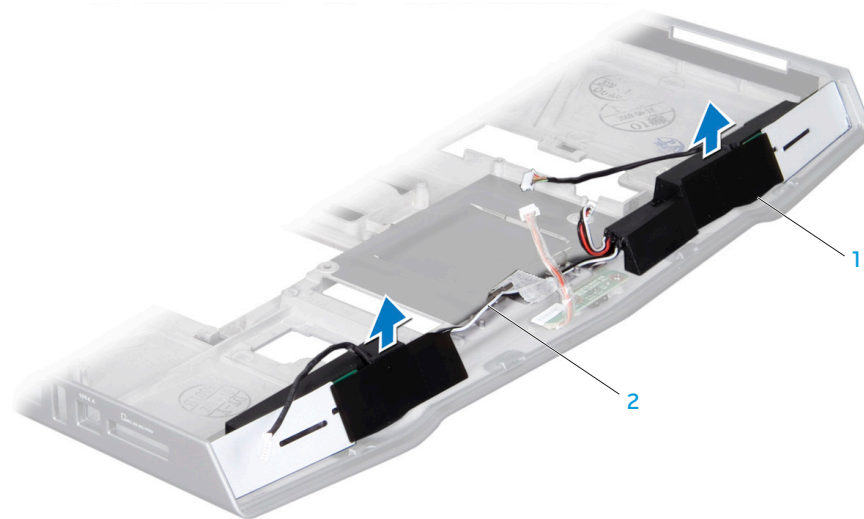
Removing the Battery Latch Assembly

1. Follow the instructions in "Before You Begin" on page 6.
2. Remove the system board (see "Removing the System Board" on page 102).
3. Using a screwdriver, release the latch spring from the hook on the battery latch assembly.
4. Remove the screw that secures the battery latch to the battery latch assembly.
5. Slide and lift the battery latch assembly out of the computer base.

Replacing the Battery Latch Assembly

1. Follow the instructions in "Before You Begin" on page 6.
2. Place the battery latch assembly in the channel in the computer base.
3. Replace the screw that secures the battery latch to the battery latch assembly.
4. Using a screwdriver, place the spring over the hook on the computer base. Ensure that the newly installed battery latch assembly moves smoothly and freely when pushed and released.
5. Replace the system board (see "Replacing the System Board" on page 104).

⚠ CAUTION: Before turning on the computer, replace all screws and ensure that no stray screws remain inside the computer. Failure to do so may result in damage to the computer.
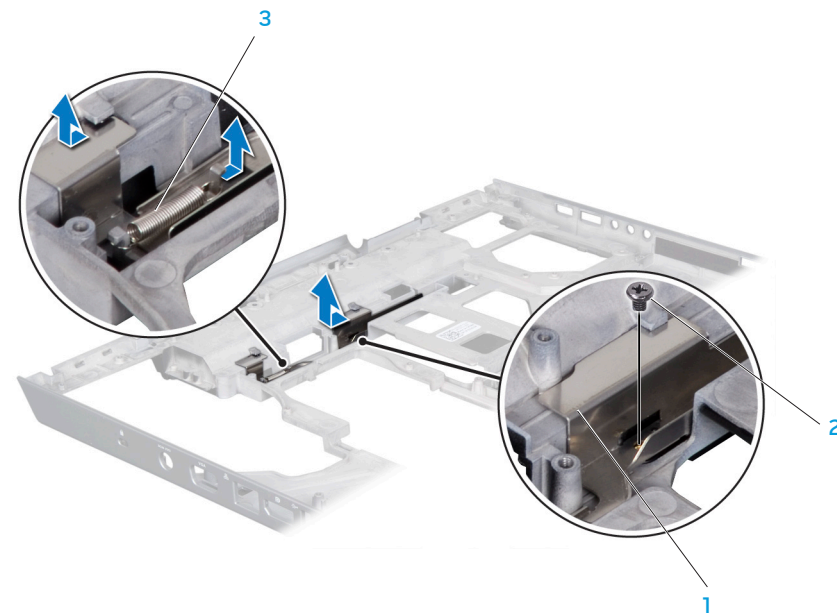
1	battery latch assembly	3	spring
2	screw		

CHAPTER 25: SYSTEM SETUP

Overview

The System Setup options allow you to:

- Change the system configuration information after you add, change, or remove any hardware in your laptop.
- Set or change a user-selectable option.
- View the installed amount of memory or set the type of hard drive installed.

Before you use System Setup, it is recommended that you write down the current System Setup information for future reference.

⚠ CAUTION: Do not change the settings in System Setup unless you are an expert computer user. Certain changes can cause your computer to work incorrectly.

Entering System Setup

1. Turn on (or restart) your laptop.
2. While the laptop is booting, press <F2> immediately before the operating system logo appears to access System Setup.
   If an error occurs during POST (Power On Self Test), you may also enter the System Setup by pressing <F2> when prompted.

⚠ NOTE: If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop, then shut down your laptop and try again.

⚠ NOTE: Keyboard failure may result when a key on the keyboard is held down for extended periods of time. To avoid possible keyboard failure, press and release <F2> in even intervals until the System Setup screen appears.

System Setup Screens

The System Setup window displays current or changeable configuration information for your laptop. Information is divided into five menus: **Main**, **Advanced**, **Security**, **Boot**, and **Exit**.

Key functions appear at the bottom of the System Setup window and lists keys and their functions within the active field.

System Setup Options

⚠️ **NOTE:** Depending on your computer and installed devices, the items listed in this section may not appear, or may not appear exactly as listed.

Main Menu

System Time	Displays the system time.
System Date	Displays the system date.
Alienware	Displays the model number of your computer.
Set Service Tag	Allows you to enter your computer service tag after a system board replacement.
Service Tag	Displays the service tag of your computer.
BIOS Version	Displays the BIOS revision.
EC Version	Displays the EC firmware version.
CPU	Displays the type of processor.
CPU Speed	Displays the speed of the processor.
CPU Cache	Displays the processor cache size.
CPU ID	Displays the ID of the processor.

Main Menu

Total Memory	Displays the total memory available in your computer.
Memory Bank 0	Displays the memory size installed in memory bank 0.
Memory Bank 1	Displays the memory size installed in memory bank 1.

Advanced Menu

Summary Screen	Allows you to enable or disable the diagnostic screen during boot.
Intel® Virtualization Technology	Allows you to enable or disable the virtualization technology. This option specifies whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by Intel Virtualization Technology.
Intel Speed Step	Allows you to enable or disable the Intel SpeedStep® technology. Disabling this feature may improve performance, but will greatly reduce battery life.
Wired Network	Allows you to enable or disable the on-board LAN controller. ▪ Disabled: Internal LAN is off and is not visible to the operating system. ▪ Enabled: Internal LAN is enabled.

Advanced Menu

`Wireless Network`	Allows you to enable or disable the internal wireless device. • Disabled: The internal wireless device is off and is not visible to the operating system. • Enabled: The internal wireless device is enabled.
`Bluetooth Receiver`	Allows you to enable or disable the internal Bluetooth device. • Disabled: The internal Bluetooth device is off and is not visible to the operating system. • Enabled: The internal Bluetooth device is enabled.
`High Definition Sound`	Allows you to enable or disable the internal high definition audio device. • Disabled: The internal audio device is off and is not visible to the operating system. • Enabled: The internal audio device is enabled.
`USB Emulation`	Allows you to enable or disable the USB emulation feature. This feature defines how the BIOS, in the absence of a USB-aware operating system, handles USB devices. USB emulation is always enabled during POST (Power On Self Test). **Note**: You cannot boot any type of USB device (floppy, hard drive, or memory key) when this option is off.

Advanced Menu

`SATA Operation`	Allows you to configure the operating mode of the integrated SATA hard drive controller. • ATA: SATA is configured for ATA mode. • AHCI: SATA is configured for AHCI mode.
`eSATA`	Allows you to enable or disable the eSATA connector. • Disabled: The eSATA connector is off and is not visible to the operating system. • Enabled: The eSATA connector is enabled.
`SATA Hard Drive`	Displays the installed SATA hard drive model.
`SATA Optical Drive`	Displays the installed SATA optical drive model.

Performance Options Sub-Menu

`CPU Speed`	Displays the speed of the processor.
`Memory Frequency`	Displays the frequency of the memory.
`Memory Channel Mode`	Displays the memory channel modes.
	▪ Single
	▪ Dual
`CPU Performance Mode`	Indicates if the processor is in turbo mode or not.
`Turbo Mode`	Allows you to enable or disable the turbo mode.
`Select Clock Mode`	Allows you to choose the FSB-memory system clock mode.
	▪ Auto
	▪ Unlinked
`Memory Frequency`	Allows you to set the memory frequency.
	Note: The memory frequency option appears only if the clock mode is set to unlinked.
`DDR3 Voltage`	Allows you to enter the memory voltage.

Security Menu

`Supervisor Password Is`	Displays if the supervisor password is clear or set.
`User Password Is`	Displays if the user password is clear or set.
`Set Supervisor Password`	Allows you to set the supervisor password. The supervisor password controls access to the system setup utility.
`Set User Password`	Allows you to set the user password. The user password controls access to the computer at boot.
`Password on boot`	Allows you to enable or disable password entry on boot.
`Asset Tag`	Displays the asset tag.

Security Menu

`Computrace®`	Allows you to activate or disable the BIOS module interface of the optional Computrace® Service from Absolute® Software.

The Computrace® agent from Absolute® Software is a service solution designed to help track assets and provide recovery services in the event the computer is lost or stolen. The Computrace® agent communicates with the Absolute® software Monitoring Server at programmed intervals to provide the tracking service. By activating the service, you consent to the transmission of information from and to your computer and the Absolute® Software Monitoring Server. The Computrace® service is purchased as an option and the monitoring Server will enable its agent security module through an interface provided by the BIOS.

- Deactivate: the Computrace® module interface is not active.
- Disable: permanently block the Computrace® module interface.
- Activate: permit the Computrace® module interface.

The Absolute® Anti-Theft solution is presently Deactivated. Note that the activate or disable options will permanently activate or disable the feature and no further changes will be allowed. |

Power Menu

`A/C Adapter Rating`	Displays the AC adapter rating.
`A/C Adapter Warnings`	Allows you to choose if the computer should display warning messages when you use certain power adapters. The computer displays these messages if you attempt to use a power adapter that has too little capacity for your configuration.
`USB Wake Support`	Allows you to enable USB devices to wake the computer from standby or to disable the USB wake support feature.

Boot Menu

`Hard Drive`	Sets the hard drive boot priority.
`USB Storage`	Sets the USB storage boot priority.
`CD\DVD\BD-ROM`	Sets the optical drive boot priority.
`Removable Devices`	Sets the removable devices boot priority.
`Network`	Sets the network boot priority.

Note: The items displayed in the **Boot Menu** are dynamically updated according to the devices detected.
To change the boot order, press the plus (+) or minus (−) keys on the keyboard.

Exit Menu

`Exit Saving Changes`	Allows you to exit System Setup and save your changes to CMOS.
`Exit Discarding Changes`	Allows you to exit utility without saving Setup data to CMOS.
`Load Setup Defaults`	Allows you to load default values for all Setup items.
`Discard Changes`	Allows you to load previous values from CMOS for all Setup items.
`Save Changes`	Allows you to save Setup data to CMOS.

Flashing the BIOS

The BIOS may require flashing when an update is available or when replacing the system board. To flash the BIOS:

1. Ensure that the AC adapter is plugged in, the main battery is properly installed, and a network cable is attached.
2. Turn on the computer.
3. Visit **support.dell.com**.
4. Select your country and language.
5. Click **Drivers & Downloads**.
6. Locate the latest BIOS update file for your computer:

⚠️ **NOTE:** The Service Tag is located on a barcode label on the bottom of your computer.

- If you have your computer's Service Tag:

   a. Click **Enter a Service Tag.**
   b. Enter your computer's Service Tag in the **Enter a service tag:** field, click **Go**, and proceed to step 7.

- If you do not have your computer's Service Tag:

   a. Click **Select Your Product Model** in the **Select Your Entry Method** list.
   b. Select the type of product in the **Select Your Product Family** list.
   c. Select the product brand in the **Select Your Product Line** list.
   d. Select the product model number in the **Select Your Product Model** list.

⚠️ **NOTE:** If you have selected a different model and want to start over again, click **Start Over** on the top right of the menu.

   e. Click **Confirm**.

7. A list of results appear on the screen. Click **BIOS**.
8. Click **Download Now** to download the latest BIOS file.
   The **File Download** window appears.
9. Click **Save** to save the file to your desktop.
   The file downloads to your desktop.
10. Click **Close** if the **Download Complete** window appears.
    The file icon appears on your desktop and is titled the same as the downloaded BIOS update file.
11. Double-click the file icon on the desktop and follow the instructions on the screen.